Program of Instruction
Course Syllabus

Course Title:  
Statewide WMD Response: Structural Collapse Rescue Technician

Course Duration: 45 hours

Program: Technical Rescue Program

Level of Training: Technician

Course Prerequisites:
- Vehicle Machinery Operations
- Vehicle Machinery Technician
- Statewide WMD Response: Technical Rescue Awareness
- Statewide WMD Response: Rope Rescue Operations
- Statewide WMD Response: Rope Rescue Technician
- Statewide WMD Response: Confined Space Rescue Operations
- Statewide WMD Response: Confined Space Rescue Technician
- Statewide WMD Response: Trench Rescue Operations
- Statewide WMD Response: Trench Rescue Technician
- Statewide WMD Response: Hazardous Materials Operations
- Statewide WMD Response: Structural Collapse Rescue Operations

Course Description: The scope of this course is to prepare responders to operate as a local member of a regional team within the NIMS at a CBRNE (Chemical, Biological, Radiological, Nuclear, or Explosive) WMD event requiring statewide response that has resulted in the failure of a building constructed of steel, concrete, or masonry. This course is extensively hands-on and prepares the student to operate safely and efficiently at a building collapse incident involving WMD. It offers practice in cutting, breaching, lifting, stabilizing, searching, shoring, packaging, and removing victims from a simulated collapse environment. This course is intense and physically demanding, but the competence and confidence that is gained is worth the sweat that is lost.

Course Content:

Module: C-1
Title: Material Properties

Terminal Learning Objective: At the conclusion of this module, the student will summarize the properties of materials used in building construction
Module: C-2
Title: Force Types

Terminal Learning Objective:
At the conclusion of this module, the student will distinguish the types of forces that are exerted on materials used in building construction.

Module: C-3
Title: Structural Members and Load Systems

Terminal Learning Objective:
At the conclusion of this module, the student will categorize the fundamental concepts of structural members as they are used in building construction.

Module: C-4
Title: Building Types

Terminal Learning Objective:
At the conclusion of this module, the student will relate general characteristics, hazards, principal weaknesses, and properties of the various building types.

Module: C-5
Title: Search and Recon

Terminal Learning Objective:
At the conclusion of this module, the student will identify the components and characteristics of search and reconnaissance.

Module: C-6
Title: Building Assessment

Terminal Learning Objective:
At the conclusion of this module, the student will apply building assessment principles to a collapsed structure.

Module: C-7
Title: Marking Systems

Terminal Learning Objective:
At the conclusion of this module, the student will use the different marking systems utilized during a structural collapse incident.
Module: C-8
Title: Tools

Terminal Learning Objective:
At the conclusion of this module, the student will explain the proper use of various tools used at a structural collapse incident.

Module: C-9
Title: Concrete

Terminal Learning Objective:
At the conclusion of this module, the student will relate the characteristics of concrete to operations at a structural collapse incident.

Module: C-10
Title: Calculating Weights

Terminal Learning Objective:
At the conclusion of this module, the student will determine the weights of various building materials.

Module: C-11
Title: Rigging and Anchoring

Terminal Learning Objective:
At the conclusion of this module, the student will explain the use of rigging and anchoring at a structural collapse incident.

Module: C-12
Title: Lifting and Moving

Terminal Learning Objective:
At the conclusion of this module, the student will summarize the appropriate techniques used for lifting / moving heavy objects.
Module: C-13
Title: Crane Operations

Terminal Learning Objective:
At the conclusion of this module, the student will coordinate the use of a crane to move various objects to a safe zone.

Module: C-14
Title: WMD

Terminal Learning Objective:
At the conclusion of this module, the student will summarize the considerations at a WMD incident.

Module: P-15
Title: Specialty Tools

Terminal Learning Objective:
At the conclusion of this module, the student will demonstrate the use of various specialty tools that may be utilized during a structural collapse rescue.

Module: P-16
Title: Breaching and Breaking

Terminal Learning Objective:
At the conclusion of this module, the student will demonstrate the proper operation for completing a breach for entry.

Module: P-17
Title: Gas Powered Saws

Terminal Learning Objective:
At the conclusion of this module, the student will demonstrate the proper and safe use of the various gas-powered tools utilized for cutting concrete.
Module: P-18
Title: Anchoring

Terminal Learning Objective:
At the conclusion of this module, the student will *demonstrate* the use of anchors and hardware that may be utilized during a structural collapse rescue.

Module: P-19
Title: Hydraulic Saws

Terminal Learning Objective:
At the conclusion of this module, the student will demonstrate the proper and safe use of the hydraulic-powered saws utilized for cutting concrete.

Module: P-20
Title: Hydraulic Tools

Terminal Learning Objective:
At the conclusion of this module, the student will *demonstrate* the proper use of various hydraulic tools that may be used at a structural collapse incident.

Module: P-21
Title: Metal Cutting and Burning

Terminal Learning Objective:
At the conclusion of this module, the student will *demonstrate* the proper use of various hydraulic tools that may be used at a structural collapse incident.

Module: P-22
Title: Rescue Shoring

Terminal Learning Objective:
At the conclusion of this module, the student will utilize various shoring systems to stabilize a collapsed structure.
Module: P-23
Title: Bridge Beam

Terminal Learning Objective:
At the conclusion of this module, the student will lift and stabilize the selected object.

Module: P-24
Title: Crane Ops

Terminal Learning Objective:
At the conclusion of this module, the student will use the proper hand signals directing a crane operator during operations.

Module: P-25
Title: Stitch Cut

Terminal Learning Objective:
At the conclusion of this module, the student will be able to perform a stitch cut.

Module: P-26
Title: Dirty Breaches

Terminal Learning Objective:
At the conclusion of this module, the student will be able to conduct a Dirty Breach.

Module: P-27
Title: Lifting and Moving

Terminal Learning Objective:
At the conclusion of this module, the student will lift, stabilize and move a heavy section of concrete.

Module: P-28
Title: Breaking and Breaching in a confined space

Terminal Learning Objective:
At the conclusion of this module, the student will create a series of breaches large enough and so configured for entry.
Module: P-29
Title: Deck of Cards

Terminal Learning Objective:
At the conclusion of this module, the student will be able to estimate, lift, move, stabilize and realign sections of concrete to a predetermined order with each section of concrete intersecting each other.

Module: P-30
Title: Horizontal Liftouts

Terminal Learning Objective:
At the conclusion of this module, the student will breach a concrete floor by means of cutting a large square section and lifting out the section to perform a rescue of victims trapped directly below.

Module: P-31
Title: Final Scenario

Terminal Learning Objective:
At the conclusion of this module, the student will operate in a collapsed structure (heavy concrete and steel) as a member of a rescue team assigned to various functions within a collapse rescue scenario.

Evaluation Strategy:
Written and practical skill testing is conducted at the completion of the course. In addition, simulated rescue evolutions involving various rescue problems are conducted throughout the course.
References:

Emergency Response to Terrorism Basic Concepts-Student Manual FEMA 2002

FEMA National Urban Search and Rescue Response System: Incident Command System for Structural Collapse Incidents


IUOE Local 150, Apprenticeship and Skill Improvement Program: Safe Rigging Procedures for Emergency Responders

National Fire Protection Association Standards 1006 Standard for Rescue Technician Professional Qualifications

National Fire Protection Association Standards 1670 Standard on Operations and Training for Technical Search and Rescue Incidents


United States Army Corps of Engineers: Urban Search and Rescue Structures Specialist Field Operations Guide
# Course Schedule

## DAY ONE

**Start Time:** 0800

<table>
<thead>
<tr>
<th>Event</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material Properties</td>
<td>1 hour</td>
</tr>
<tr>
<td>Force Types</td>
<td>20 minutes</td>
</tr>
<tr>
<td>Structural Members and Load Systems</td>
<td>20 minutes</td>
</tr>
<tr>
<td>Building Types</td>
<td>1 hour</td>
</tr>
<tr>
<td><strong>Break</strong></td>
<td></td>
</tr>
<tr>
<td>Search and Recon</td>
<td>1 hour</td>
</tr>
<tr>
<td>Building Assessment</td>
<td>20 minutes</td>
</tr>
<tr>
<td>Marking Systems</td>
<td>20 minutes</td>
</tr>
<tr>
<td>Tools</td>
<td>20 minutes</td>
</tr>
<tr>
<td><strong>Lunch</strong></td>
<td></td>
</tr>
<tr>
<td>Concrete</td>
<td>1 hour</td>
</tr>
<tr>
<td>Calculating Weights</td>
<td>30 minutes</td>
</tr>
<tr>
<td>Rigging and Anchoring</td>
<td>1 hour</td>
</tr>
<tr>
<td><strong>Break</strong></td>
<td></td>
</tr>
<tr>
<td>Lifting and Moving</td>
<td>1 hour 20 minutes</td>
</tr>
<tr>
<td>Crane Operations</td>
<td>1 hour</td>
</tr>
<tr>
<td>WMD</td>
<td>30 minutes</td>
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### DAY TWO

**Start Time:** 0800

<table>
<thead>
<tr>
<th>Event</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specialty Tools</td>
<td>1 hour</td>
</tr>
<tr>
<td>Breaching and Breaking</td>
<td>1 hour</td>
</tr>
<tr>
<td>Gas Powered Saws</td>
<td>1 hour</td>
</tr>
<tr>
<td>Anchoring</td>
<td>1 hour</td>
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</tbody>
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**Lunch**

<table>
<thead>
<tr>
<th>Event</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydraulic Saws</td>
<td>1 hour 15 min</td>
</tr>
<tr>
<td>Hydraulic Tools</td>
<td>1 hour 15 min</td>
</tr>
<tr>
<td>Metal Cutting and Burning</td>
<td>1 hour 15 min</td>
</tr>
<tr>
<td>Rescue Shoring</td>
<td>1 hour 15 min</td>
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</table>

### DAY THREE

**Start Time:** 0800

<table>
<thead>
<tr>
<th>Event</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridge Beam</td>
<td>2 hours</td>
</tr>
<tr>
<td>Crane Operations</td>
<td>2 hours</td>
</tr>
</tbody>
</table>

**Lunch**

<table>
<thead>
<tr>
<th>Event</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stitch Cuts</td>
<td>1 hour 30 min</td>
</tr>
<tr>
<td>Dirty Breaches</td>
<td>1 hour 30 min</td>
</tr>
<tr>
<td>Lifting and Moving</td>
<td>3 hours</td>
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</tbody>
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## DAY FOUR

**Start Time:** 0800

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<th>Event</th>
<th>Duration</th>
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</thead>
<tbody>
<tr>
<td>Exam</td>
<td></td>
</tr>
<tr>
<td>Breaking and Breaching in a Confined Space</td>
<td>4 hours</td>
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</table>

**Lunch**

<table>
<thead>
<tr>
<th>Event</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deck of Cards</td>
<td>2 hours</td>
</tr>
<tr>
<td>Horizontal Liftouts</td>
<td>2 hours</td>
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</tbody>
</table>